Rule DAS330: Large PEND time probably was caused by shared DASD conflicts

Finding: CPExpert believes that the large PEND time performance problems were caused by shared DASD conflicts.

Impact: This finding is used to assess whether sharing DASD between systems or MVS images caused performance problems.

Logic flow: The following rules cause this rule to be invoked:

DAS100: Volume with the worst overall performance
DAS130: Major cause of I/O delay was PEND time
DAS132: Large PEND time may be caused by other system
DAS300: Shared DASD conflicts caused performance problems

Discussion: If CPExpert determines that large PEND time was the major cause of I/O response delay and if the device is shared, CPExpert analyzes other systems in the performance data base which share the volume.

The PEND time is a measure of the time an I/O operation waited (1) for a channel path to become available, (2) for the controller to become available, or (3) for the device because the device was busy to another system.

- If the I/O operation waited for a channel path, the I/O delay was caused by activity on the system issuing the I/O operation. Since channel paths are not shared between systems, the delay must occur at the controller or device level if the delay was caused by sharing DASD.

- If the I/O operation waited for the controller to become available, the I/O delay could be caused by activity on the system issuing the I/O operation or could be caused by another system which was using the controller.

- If the I/O operation waited for the device, the I/O delay was caused by another system which was using the device. The I/O Supervisor (IOS) on the system issuing the I/O operation could not know that the device was busy with another system (the device Unit Control Block would not reflect the "busy" status). Consequently, the IOS would believe the device was available and would issue the I/O operation. The I/O operation would wait while the device was busy to the other system. This time would be reflected as PEND time.

CPExpert analyzes the I/O activity from other systems sharing the device. The I/O activity measures used by CPExpert consists of the DISC time and CONN time from other systems. CPExpert substitutes the total RESERVE time for other systems if the total RESERVE time for other systems is greater than the I/O activity time.

CPExpert concludes the high PEND time is caused by other systems sharing the device if the device I/O activity (or total RESERVE time) is more than 25% of the PEND time experienced by the system being analyzed.

Suggestion: You should use the information displayed by Rule DAS300 to assess the significance of the performance problems caused by shared DASD. Please refer to the suggestions associated with Rule DAS300 for alternative actions you may consider.

